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【286】 Controlling the electron beam energy at SwissFEL

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SwissFEL at the Paul Scherrer Institute provides femtosecond X-ray pulses for experiments by accelerating electron beams up to ~ 6 GeV before they are sent to undulators where they produce coherent, narrow bandwidth X-rays. The correlated energy spread of the beam is finely controlled using passive dielectric structures or structures with corrugated surfaces separated by an adjustable gap. These structures are routinely used to perform beam manipulations that optimize the FEL bandwidth or control the X-ray pulse duration down to 1 femtosecond. We compare experimental and simulation results for our dielectric structure to show short-range wakefields are responsible for tuning the central energy and energy spread of the SwissFEL beam.

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